

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 16:30:01 ON 30 MAR 2011
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FILE COVERS 1907 - 30 Mar 2011 VOL 154 ISS 14
FILE LAST UPDATED: 29 Mar 2011 (20110329/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Feb 2011
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Feb 2011

HCAPLUS now includes complete International Patent Classification (IPC) reclassification data for the fourth quarter of 2010.

CAS Information Use Policies apply and are available at:

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> fil reg

FILE 'REGISTRY' ENTERED AT 16:30:03 ON 30 MAR 2011
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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 29 MAR 2011 HIGHEST RN 1272065-66-3
DICTIONARY FILE UPDATES: 29 MAR 2011 HIGHEST RN 1272065-66-3

CAS Information Use Policies apply and are available at:

<http://www.cas.org/legal/infopolicy.html>

TSCA INFORMATION NOW CURRENT THROUGH January 14, 2011.

Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d que stat 180

L1	2	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	US2006-588481/AP
L4	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	BIPHENYL/CN
L5	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	ISOPROPYLBENZENE/CN
L6	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	VINYLBENZENE/CN
L7	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	ETHYLBENZENE/CN
L8	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	TOLUENE/CN
L9	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	T-BUTYLBENZENE/CN
L10	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	MESITYLENE/CN
L11	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	BROMOETHYLBENZENE/CN
L12	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	THIOPHENE/CN
L13	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	CYCLOHEXYLBENZENE/CN
L14	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	FURAN/CN
L15	1	SEA FILE=REGISTRY	SPE=ON	ABB=ON	PLU=ON	FLUOROBIPHENYL/CN
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L17	13306	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L5
L18	81745	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L6
L19	32688	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L7
L20	115160	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L8
L21	3436	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L9
L22	10794	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L10
L23	42	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L11
L24	14762	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L12
L25	1834	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L13
L26	11850	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L14
L27	12	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L15
L28		QUE	SPE=ON	ABB=ON	PLU=ON	(LI OR LITHIUM) (A) SALT
L29		QUE	SPE=ON	ABB=ON	PLU=ON	ELECTROLY?
L30		QUE	SPE=ON	ABB=ON	PLU=ON	ELECTROLY? (A) (SOLVENT OR SOLUTION)
L31	799	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L16 AND L17
L32	11	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L31 AND L29
L33	2	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L32 AND L28
L34	8046	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L18 AND L19
L35	44	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L34 AND L29
L36	2	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L35 AND L28
L37		QUE	SPE=ON	ABB=ON	PLU=ON	LI OR LITHIUM
L38	4	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L35 AND L37
L39		QUE	SPE=ON	ABB=ON	PLU=ON	BATTERY
L40	4	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L35 AND L39
L41	4	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L36 OR L38 OR L40
L42	6	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L32 AND L37
L43	6	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L32 AND L39
L44	7	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L33 OR (L42 OR L43)
L45	1951	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L20 AND L21
L46	27	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L45 AND L29
L47	1	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L46 AND L28
L48	6	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L46 AND L39
L49	7	SEA FILE=HCAPLUS	SPE=ON	ABB=ON	PLU=ON	L46 AND L37

L50 8 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L48 OR L49
 L52 49 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L24 AND L25
 L53 12 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L52 AND L37
 L54 6 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L53 AND L28
 L55 10 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L52 AND L39
 L57 10 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L53 AND L55
 L58 6 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L54 AND L30
 L60 8 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L36 OR L47 OR
 L58 OR L33
 L61 16 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON (L41 OR L44 OR
 L50 OR L57) NOT L60
 L62 7 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L60 NOT L1
 L63 27139 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON (L16 OR L18 OR
 L20 OR L22 OR L24 OR L26) AND (L25 OR L17 OR L21 OR L19)
 L64 315 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L63 AND L29
 L65 108 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L64 AND L37
 L66 37 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L65 AND L28
 L67 24 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L66 AND L30
 L68 QUE SPE=ON ABB=ON PLU=ON ADDITIV?
 L69 17 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L67 AND L68
 L70 QUE SPE=ON ABB=ON PLU=ON (FIRST OR 1ST OR 1(W)ST) (2A)
 L68
 L72 22753 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON (L20 OR L22 OR
 L24 OR L26) AND (L25 OR L17 OR L19 OR L21 OR L27 OR L23)
 L73 215 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L72 AND L29
 L74 43 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L73 AND L37
 L75 11 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L74 AND L28
 L76 4 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L75 AND L68
 L77 1 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L76 AND L70
 L78 11 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON (L75 OR L76 OR
 L77)
 L79 18 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON (L69 OR L78)
 NOT (L61 OR L62)
 L80 17 SEA FILE=HCAPLUS SPE=ON ABB=ON PLU=ON L79 NOT L1

=> d ibib abs hitstr hitind l80 1-17

L80 ANSWER 1 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN
 ACCESSION NUMBER: 2011:224824 HCAPLUS Full-text
 DOCUMENT NUMBER: 154:239646
 TITLE: Nonaqueous electrolyte lithium
 secondary battery
 INVENTOR(S): Nakajima, Satoshi; Kato, Ryuichi; Usami,
 Yasushi; Sakai, Akihiko
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan; Mitsubishi
 Plastics Industries, Ltd.
 SOURCE: Jpn. Tokkyo Koho, 19pp.; Chemical Indexing
 Equivalent to 143:81118 (WO)
 CODEN: JTXXFF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 4635432	B2	20110223	JP 2003-416762	200312

JP 2005174868 A 20050630
WO 2005057690 A1 20050623 WO 2004-JP18985
200412
14
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG
EP 1705736 A1 20060927 EP 2004-807342
200412
14
R: DE
CN 1934728 A 20070321 CN 2004-80041089
200412
14
CN 100541863 C 20090916
US 20070048607 A1 20070301 US 2006-453006
200606
15
KR 2007019965 A 20070216 KR 2006-7014229
200607
14
PRIORITY APPLN. INFO.: JP 2003-416761 A
200312
15
JP 2003-416762 A
200312
15
JP 2004-33617 A
200402
10
JP 2004-33618 A
200402
10
JP 2004-33619 A
200402
10
WO 2004-JP18985 W
200412
14

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

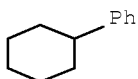
AB The present invention aims to improve cycle characteristics of a high-capacity secondary battery wherein an active material is filled in at a high d. by using a particulate active material having a small aspect ratio. Disclosed is a nonaq. ~~electrolyte~~ secondary battery comprising a pos. electrode and neg.

electrode capable of adsorbing/desorbing lithium, a separator and a nonaq. electrolyte solution containing a nonaq. solvent and a lithium salt is characterized in that the separator has a porous film composed of a thermoplastic resin containing an inorg. filler, and in that the active material contained in the neg. electrode is a particulate active material having an aspect ratio of not less than 1.02 and not more than 3 and/or the active material contained in the pos. electrode is a particulate active material having an aspect ratio of not less than 1.02 and not more than 2.2.

IT 92-52-4, 1,1'-Biphenyl, uses 827-52-1
 RL: MOA (Modifier or additive use); USES (Uses)
 (additive for nonaq. electrolyte
 solns. for lithium batteries)
 RN 92-52-4 HCAPLUS
 CN 1,1'-Biphenyl (CA INDEX NAME)



RN 827-52-1 HCAPLUS
 CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-0569 [I,A]; H01M0010-0568 [I,A]; H01M0010-0525 [I,A];
 H01M0002-16 [I,A]; H01M0004-131 [I,A]
 IPCR H01M0002-16 [I,A]; H01M0002-16 [I,C*]; H01M0004-02 [I,A];
 H01M0004-02 [I,C*]; H01M0004-58 [I,A]; H01M0004-58 [I,C*];
 H01M0010-36 [I,C*]; H01M0010-40 [I,A]
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium battery separator cathode active material aspect
 ratio
 IT Polyolefin rubber
 RL: TEM (Technical or engineered material use); USES (Uses)
 (butene-ethylene-propene, block; lithium battery
 separator compns. containing)
 IT Castor oil
 RL: TEM (Technical or engineered material use); USES (Uses)
 (hydrogenated, Hy-Castor Oil; lithium battery separator
 compns. containing)
 IT Battery electrodes
 (lithium battery; aspect ratio of active substances
 for)
 IT Secondary battery separators
 (lithium battery; inorg. fillers for)
 IT Battery electrolytes
 (nonaq.; additives for lithium battery)
 IT 92-52-4, 1,1'-Biphenyl, uses 827-52-1
 RL: MOA (Modifier or additive use); USES (Uses)
 (additive for nonaq. electrolyte
 solns. for lithium batteries)

IT 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium
oxide (CoLiO2) 855472-25-2, Lithium manganese nickel
oxide (Li1.05Mn0.5Ni0.5O2.05)
RL: TEM (Technical or engineered material use); USES (Uses)
(aspect ratios of lithium battery electrode active
substances)

IT 7727-43-7
RL: MOA (Modifier or additive use); USES (Uses)
(filler for lithium battery separator compns.)

IT 9002-88-4
RL: TEM (Technical or engineered material use); USES (Uses)
(lithium battery separator compns. containing)

OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS
RECORD (3 CITINGS)

L80 ANSWER 2 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2010:1457219 HCAPLUS Full-text

DOCUMENT NUMBER: 153:603674

TITLE: Nonaqueous electrolyte lithium
secondary battery

INVENTOR(S): Nakashima, Satoshi; Kato, Ryuichi; Usami,
Yasushi; Sakai, Akihiko

PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan; Mitsubishi
Plastics Industries, Ltd.

SOURCE: Jpn. Tokkyo Koho, 20pp.; Chemical Indexing
Equivalent to 143:81118 (WO)
CODEN: JTXXFF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 4586359	B2	20101124	JP 2003-416761	20031215
JP 2005174867	A	20050630		
WO 2005057690	A1	20050623	WO 2004-JP18985	20041214
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1705736	A1	20060927	EP 2004-807342	20041214
R: DE CN 1934728				
	A	20070321	CN 2004-80041089	200412

CN 100541863	C	20090916		14
US 20070048607	A1	20070301	US 2006-453006	
				200606
				15
KR 2007019965	A	20070216	KR 2006-7014229	
				200607
				14
PRIORITY APPLN. INFO.:			JP 2003-416761	A
				200312
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			JP 2003-416762	A
				200312
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			JP 2004-33617	A
				200402
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			JP 2004-33618	A
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				200412
				14

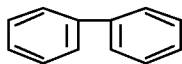
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention aims to improve cycle characteristics of a high-capacity secondary battery wherein an active material is filled in at a high d. by using a particulate active material having a small aspect ratio. Disclosed is a nonaq. ~~electrolyte~~ secondary battery comprising a pos. electrode and neg. electrode capable of adsorbing/desorbing lithium, a separator and a nonaq. ~~electrolyte~~ solution containing a nonaq. solvent and a lithium salt is characterized in that the separator has a porous film composed of a thermoplastic resin containing an inorg. filler, and in that the active material contained in the neg. electrode is a particulate active material having an aspect ratio of not less than 1.02 and not more than 3 and/or the active material contained in the pos. electrode is a particulate active material having an aspect ratio of not less than 1.02 and not more than 2.2.

IT 92-52-4, 1,1'-Biphenyl, uses 827-52-1
 RL: MOA (Modifier or additive use); USES (Uses)
 (additive for nonaq. ~~electrolyte~~
 solns. for lithium batteries)

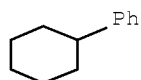
RN 92-52-4 HCAPLUS

CN 1,1'-Biphenyl (CA INDEX NAME)



RN 827-52-1 HCAPLUS

CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-0567 [I,A]; H01M0010-0568 [I,A]; H01M0010-0569 [I,A];
H01M0010-052 [I,A]; H01M0010-0525 [I,A]; H01M0002-16 [I,A]
IPCR H01M0002-16 [I,A]; H01M0010-0567 [I,A]; H01M0004-02 [I,A];
H01M0004-58 [I,A]; H01M0010-052 [I,A]; H01M0010-0525 [I,A];
H01M0010-0568 [I,A]; H01M0010-0569 [I,A]; H01M0010-40 [I,A];
H01M0002-16 [I,C*]; H01M0004-02 [I,C*]; H01M0004-58 [I,C*];
H01M0010-36 [I,C*]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium battery separator cathode active material aspect
ratio
IT Polyolefin rubber
RL: TEM (Technical or engineered material use); USES (Uses)
(butene-ethylene-propene, block; lithium battery
separator compns. containing)
IT Castor oil
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrogenated, Hy-Castor Oil; lithium battery separator
compns. containing)
IT Battery electrodes
(lithium battery; aspect ratio of active substances
for)
IT Secondary battery separators
(lithium battery; inorg. fillers for)
IT Battery electrolytes
(nonaq.; additives for lithium battery)
IT 92-52-4, 1,1'-Biphenyl, uses 827-52-1
RL: MOA (Modifier or additive use); USES (Uses)
(additive for nonaq. electrolyte
solns. for lithium batteries)
IT 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium
oxide (CoLiO2) 855472-25-2, Lithium manganese nickel
oxide (Li1.05Mn0.5Ni0.5O2.05)
RL: TEM (Technical or engineered material use); USES (Uses)
(aspect ratios of lithium battery electrode active
substances)
IT 7727-43-7
RL: MOA (Modifier or additive use); USES (Uses)
(filler for lithium battery separator compns.)
IT 9002-88-4
RL: TEM (Technical or engineered material use); USES (Uses)
(lithium battery separator compns. containing)
OS.CITING REF COUNT: 0 THERE ARE 0 CAPLUS RECORDS THAT CITE THIS
RECORD (0 CITINGS)

L80 ANSWER 3 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2010:1320031 HCAPLUS Full-text

DOCUMENT NUMBER: 153:623426

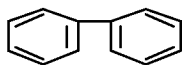
TITLE: Flame-resistance electrolyte
solution for lithium ion
battery

INVENTOR(S): Li, Lifei; Yuan, Xiangyun; Li, Jianzhong; Zhao,

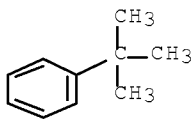
PATENT ASSIGNEE(S): Shiyong; Wang, Yiming; Guo, Jun
 Zhangjiagang Guotai-Huarong New Chemical
 Materials Co., Ltd., Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing, 17pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PRIORITY APPLN. INFO.:				201006 21
				CN 2010-10207162

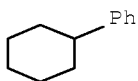
OTHER SOURCE(S): MARPAT 153:623426
 AB This electrolyte solution comprises Li salt 0.001-2 M, carbonate ester and/or ether-based organic solvent, silyl phosphate type flame-resistant additive, and other functional additive 0-0.5 M. The electrolyte solution may be applied in Li primary batteries, Li secondary batteries, and Li ion batteries.
 IT 92-52-4, Diphenyl, uses 98-06-6, tert-Butyl benzene 827-52-1, Cyclohexyl benzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (flame-resistance electrolyte solution for lithium ion battery)
 RN 92-52-4 HCAPLUS
 CN 1,1'-Biphenyl (CA INDEX NAME)



RN 98-06-6 HCAPLUS
 CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



RN 827-52-1 HCAPLUS
 CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-056 [I,A]; H01M0010-0525 [I,A]; H01M0006-14 [I,A]
 IPCR H01M0010-056 [I,A]; H01M0006-14 [I,A]; H01M0010-0525 [I,A]
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium battery flame resistance electrolyte
 soln
 IT Electrolytes
 Fireproofing agents
 (flame-resistance electrolyte solution for
 lithium ion battery)
 IT Primary batteries
 Secondary batteries
 (lithium; flame-resistance electrolyte
 solution for lithium ion battery)
 IT 92-52-4, Diphenyl, uses 96-49-1D, Ethylene carbonate,
 Fluorinated 98-06-6, tert-Butyl benzene 110-61-2,
 Butanedinitrile 827-52-1, Cyclohexyl benzene 872-36-6,
 Vinylene carbonate 1469-72-3 1469-73-4, Propylene sulfite
 2049-95-8, tert-Pentyl benzene 3741-38-6, Ethylene sulfite
 4427-96-7, Vinyl ethylene carbonate 13401-80-4 18077-41-3
 18135-11-0 66368-63-6 912259-07-5 1254942-49-8 1254942-50-1
 1254942-51-2 1254942-52-3 1254942-53-4 1254942-54-5
 1254942-55-6 1254942-56-7 1254942-57-8 1254942-58-9
 1254942-59-0 1254942-60-3 1254942-61-4
 RL: MOA (Modifier or additive use); USES (Uses)
 (flame-resistance electrolyte solution for
 lithium ion battery)
 IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 616-38-6, Dimethyl carbonate 623-53-0, Methylethyl carbonate
 623-96-1, Dipropyl carbonate 4437-85-8, Butylene carbonate
 7791-03-9, Lithium perchlorate 14283-07-9,
 Lithium tetrafluoroborate 21324-40-3, Lithium
 hexafluorophosphate 29935-35-1, Lithium
 hexafluoroarsenate 33454-82-9, Lithium
 trifluoromethylsulfonate 90076-65-6, Lithium
 bis(trifluoromethanesulfonyl)imide 132843-44-8, Lithium
 bis(perfluoroethanesulfonyl)imide 244761-29-3, Lithium
 bis(oxalato)borate 403699-22-9 409071-16-5, Lithium
 difluoro oxalatoborate 411206-71-8 662149-93-1 1243632-22-5
 RL: TEM (Technical or engineered material use); USES (Uses)
 (flame-resistance electrolyte solution for
 lithium ion battery)

L80 ANSWER 4 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN
 ACCESSION NUMBER: 2010:1201584 HCAPLUS Full-text
 DOCUMENT NUMBER: 153:510578
 TITLE: Lithium ion secondary battery
 electrolyte solution
 containing additives for overcharging
 safety
 INVENTOR(S): Li, Lifei; Yuan, Jie; Yuan, Xiangyun; Zhao,
 Shiyong; Wang, Yiming; Guo, Jun
 PATENT ASSIGNEE(S): Zhangjiagang Guotai-Huarong New Chemical
 Materials Co., Ltd., Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing, 6pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101841062	A	20100922	CN 2010-10181959	20100525

PRIORITY APPLN. INFO.:

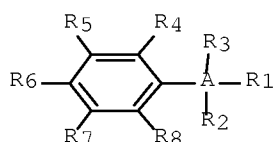
CN 2010-10181959

20100525

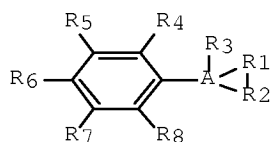
OTHER SOURCE(S):

MARPAT 153:510578

GI



I



II

AB The title electrolyte solution contains lithium salt, carbonate- and/or ether-based organic solvent, additive for safe overcharging, and other functional additive. The lithium salt has a concentration of 0.001-2 M. The additive for safe overcharging has a mass ratio of 0.01-30 weight% of the electrolyte. The other functional additive has a concentration of 0-0.5 M. The additive for safe overcharging is selected from compds. shown in structures I and II (A = C or Si; R1,2 = alkyl, alkoxy, alkenyl, etc.; R3 = cyano, isocyano, thiocyno or isothiocyno; R4-8 = H, halogen, alkyl, alkoxy, etc.).

IT 92-52-4, Biphenyl, uses 98-06-6, tert-Butylbenzene 327-52-1, Cyclohexylbenzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (Lithium ion secondary battery electrolyte solution containing additives for overcharging safety)

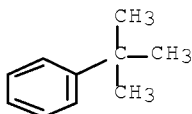
RN 92-52-4 HCAPLUS

CN 1,1'-Biphenyl (CA INDEX NAME)

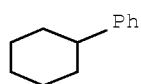


RN 98-06-6 HCAPLUS

CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



RN 827-52-1 HCAPLUS
 CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-056 [I,A]; H01M0006-16 [I,A]
 IPCR H01M0006-16 [I,C]; H01M0006-16 [I,A]
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST ~~electrolyte soln~~ safety lithium
 battery ion secondary
 IT Battery ~~electrolytes~~
 (Lithium ion secondary battery ~~electrolyte~~
 solution containing additives for overcharging safety)
 IT Secondary batteries
 (lithium; lithium ion secondary battery
~~electrolyte solution~~ containing additives
 for overcharging safety)
 IT 77-57-6 92-52-4, Biphenyl, uses 98-06-6,
 tert-Butylbenzene 110-61-2, Succinonitrile 827-52-1,
 Cyclohexylbenzene 872-36-6, Vinylene carbonate 1072-53-3
 1120-71-4, 1,3-Propanesultone 1633-83-6, 1,4-Butane sultone
 2049-95-8, tert-Pentylbenzene 3741-38-6, Ethylene sulfite
 4427-96-7, 4-Vinyl-1,3-dioxolan-2-one 114435-02-8, Fluoroethylene
 carbonate 1250860-98-0
 RL: MOA (Modifier or additive use); USES (Uses)
 (Lithium ion secondary battery ~~electrolyte~~
 solution containing additives for overcharging safety)
 IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0, Butyrolactone 96-49-1,
 Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,
 Propylene carbonate 109-99-9, Tetrahydrofuran, uses 111-96-6,
 Diethylene glycol dimethyl ether 616-38-6, Dimethyl carbonate
 623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate
 646-06-0, 1,3-Dioxacyclopentane 3266-23-7, 2-Butene oxide
 4437-85-8, Butylene carbonate 7440-37-1, Argon, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (Lithium ion secondary battery ~~electrolyte~~
 solution containing additives for overcharging safety)
 IT 13453-71-9, Lithium chlorate 14283-07-9, Lithium
 tetrafluoroborate 21324-40-3, Lithium
 hexafluorophosphate 29935-35-1, Lithium
 hexafluoroarsenate 33454-82-9, Lithium
 trifluoromethylsulfonate 90076-65-6, Lithium
 bis(trifluoromethanesulfonylimide) 244761-29-3 297162-94-8
 409071-16-5
 RL: TEM (Technical or engineered material use); USES (Uses)
 (Lithium ion secondary battery ~~electrolyte~~
 solution containing additives for overcharging safety)

L80 ANSWER 5 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN
 ACCESSION NUMBER: 2010:1144950 HCAPLUS Full-text
 DOCUMENT NUMBER: 153:485609
 TITLE: Manufacturing of polymer ~~electrolyte~~
 for lithium ion battery
 INVENTOR(S): Liu, Jiansheng; Jiang, Ling; Li, Yongkun; Zhou,

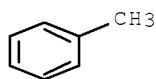
PATENT ASSIGNEE(S): Shaoyun; Li, Zhao; Zhang, Liping
 Guangzhou Tinci Materials Technology Co., Ltd.,
 Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing, 16pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101826635	A	20100908	CN 2010-10146948	20100409
PRIORITY APPLN. INFO.:			CN 2010-10146948	20100409

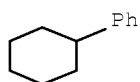
AB This manufacturing comprises (by weight percentage) electrochem. inert polymer with mol. weight of 5,000-120,000 0.5-15, ~~Li salt~~ 6-18, film forming agent 0.5-8, over charge-preventing agent 0-10, flame retardant 0-15, surfactant 0.01-0.5, and ~~electrolyte~~ stabilizing agent 0.05-0.5 in nonaq. solvent. The polymer can be polymethyl methacrylate, polyacrylonitrile, polytetrafluoroethylene, etc.; the ~~Li salt~~ can be LiPF₆, ~~Li~~ tetrafluoroborate, ~~Li~~ hexafluoroarsenate, etc.; and the nonaq. solvent can be carbonate ester, carboxylate ester, ether, etc. The battery using inventive ~~electrolyte~~ has the characteristics of conventional polymer battery and liquid battery, and further has the advantages of high safety performance, long service life, excellent low temperature performance and high rate charge/discharge performance, and simple fabrication.

IT 108-88-3, Toluene, uses 827-52-1, Cyclohexyl benzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (manufacturing of polymer ~~electrolyte~~ for lithium ion battery)

RN 108-88-3 HCAPLUS
 CN Benzene, methyl- (CA INDEX NAME)



RN 827-52-1 HCAPLUS
 CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-056 [I,A]; H01M0010-052 [I,A]; H01M0010-058 [I,A]

IPCR H01M0010-00 [I,C]; H01M0010-056 [I,A]; H01M0010-052 [I,A];
H01M0010-058 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium ion battery polymer electrolyte
fabrication safety

IT Secondary batteries
(lithium; manufacturing of polymer electrolyte for
lithium ion battery)

IT Battery electrolytes
(manufacturing of polymer electrolyte for lithium
ion battery)

IT Amines
Imines
Silanes
RL: MOA (Modifier or additive use); USES (Uses)
(manufacturing of polymer electrolyte for lithium
ion battery)

IT Fluoropolymers
RL: TEM (Technical or engineered material use); USES (Uses)
(manufacturing of polymer electrolyte for lithium
ion battery)

IT Polyoxyalkylenes
RL: TEM (Technical or engineered material use); USES (Uses)
(manufacturing of polymer electrolyte for lithium
ion battery)

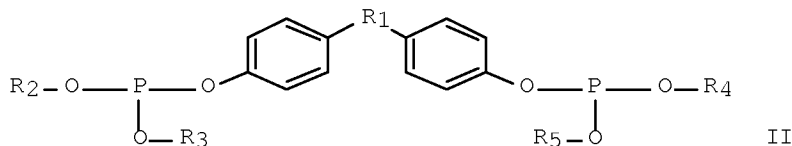
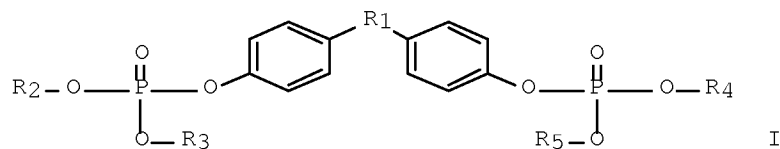
IT 78-40-0, Triethyl phosphate 92-52-4, Biphenyl, uses 103-71-9,
Phenyl isocyanate, uses 108-88-3, Toluene, uses
115-86-6, Triphenyl phosphate 121-45-9, Trimethyl phosphite
141-43-5, Ethanolamine, uses 307-35-7, Perfluorooctyl sulfonyl
fluoride 370-69-4, Tris(2,2,2-trifluoroethyl)phosphite 459-60-9,
p-Fluorophenyl methyl ether 512-56-1, Trimethyl phosphate
822-06-0 827-52-1, Cyclohexyl benzene 920-68-3,
Heptamethyl disilazane 957-13-1 1120-71-4, 1,3-Propane sultone
1184-10-7 1633-83-6, 1,4-Butane sultone 1795-31-9,
Tris(trimethylsilyl)phosphite 4325-85-3,
Tris(trimethylsilyl)borate 4427-96-7, Vinyl ethylene carbonate
6569-51-3, Borazine 6607-30-3 10497-05-9,
Tris(trimethylsilyl)phosphate 15599-91-4,
Hexafluorocyclotriphosphazene 114435-02-8, Fluoroethylene
carbonate 216382-88-6, Imidazopyridine 287931-15-1
RL: MOA (Modifier or additive use); USES (Uses)
(manufacturing of polymer electrolyte for lithium
ion battery)

IT 67-71-0, Dimethyl sulfone 79-20-9, Methyl acetate 96-48-0,
γ-Butyrolactone 96-49-1, Ethylene carbonate 105-37-3,
Ethyl propionate 105-54-4, Ethyl butyrate 105-58-8, Diethyl
carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate
109-60-4, Propyl acetate 109-87-5, Dimethoxy methane 109-94-4,
Ethyl formate 109-99-9, Tetrahydrofuran, uses 110-71-4,
1,2-Dimethoxy ethane 126-33-0, Sulfolane 141-78-6, Ethyl
acetate, uses 594-43-4, Methyl ethyl sulfone 597-35-3, Diethyl
sulfone 616-38-6, Dimethyl carbonate 623-42-7, Methyl butyrate
623-53-0, Ethyl methyl carbonate 646-06-0, 1,3-Dioxolane
1977-37-3, Methyl propyl sulfone 9002-84-0,
Polytetrafluoroethylene 9003-20-7, Polyvinyl acetate 9003-39-8,
Polyvinyl pyrrolidone 9011-14-7 9032-53-5, Carboxyl cellulose
14283-07-9, Lithium tetrafluoroborate 21324-40-3,
Lithium hexafluorophosphate 25014-41-9, Polyacrylonitrile
25120-07-4 25322-68-3, Polyethylene oxide 25322-69-4,
Polypropylene oxide 29935-35-1, Lithium

hexafluoroarsenate 33454-82-9, ~~Lithium~~ triflate
 56525-42-9, Methyl propyl carbonate 90076-65-6, ~~Lithium~~
 bis(trifluoromethanesulfonyl)imide 132404-42-3 244761-29-3,
~~Lithium~~ bis(oxalato)borate 409071-16-5, ~~Lithium~~
 difluoro(oxalato)borate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (manufacturing of polymer ~~electrolyte~~ for lithium
 ion battery)

L80 ANSWER 6 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN
 ACCESSION NUMBER: 2010:1048494 HCAPLUS Full-text
 DOCUMENT NUMBER: 153:411185
 TITLE: Flame-retardant type ~~electrolyte~~
~~solution~~ and its application
 INVENTOR(S): Li, Lifei; Yuan, Jie; Chen, Li; Yuan, Xiangyun;
 Wang, Yiming; Zhao, Shiyong
 PATENT ASSIGNEE(S): Zhangjiagang Guotai-Huarong New Chemical
 Materials Co., Ltd., Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing, 11pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

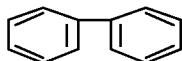
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
----- CN 101807720	A	20100818	CN 2010-10136662	201003 31
PRIORITY APPLN. INFO.:			CN 2010-10136662	201003 31
OTHER SOURCE(S):			MARPAT 153:411185	
GI				



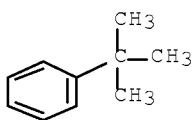
AB The title ~~electrolyte~~ solution comprises: (A) ~~Lithium salt~~ 0.001-2 mol/L, (B) carbonic ester and/or ether organic solvent, (C) flame retardant ~~additive~~ 0.1-50 weight%, and (D) other functional ~~additive~~ 0-0.5 mol/L. The flame

retardant additive is selected from structures I and II (R1 = O, alkyl, alkoxy, etc.; R2-5 = Ph, biphenyl, alkyl, etc.) The electrolyte solution may be used in lithium primary batteries, lithium secondary batteries, or lithium ion batteries.

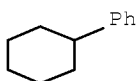
IT 92-52-4, Diphenyl, uses 98-06-6, tert-Butyl benzene 827-52-1, Cyclohexyl benzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (flame-retardant type electrolyte solution and its application)
 RN 92-52-4 HCAPLUS
 CN 1,1'-Biphenyl (CA INDEX NAME)



RN 98-06-6 HCAPLUS
 CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



RN 827-52-1 HCAPLUS
 CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-058 [I,A]; H01M0006-16 [I,A]
 IPCR H01M0010-00 [I,C]; H01M0010-058 [I,A]; H01M0006-16 [I,C];
 H01M0006-16 [I,A]
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST flame retardant battery electrolyte soln
 IT Battery electrolytes
 Fireproofing agents
 (flame-retardant type electrolyte solution and its application)
 IT Primary batteries
 Secondary batteries
 (lithium; flame-retardant type electrolyte solution and its application)
 IT 92-52-4, Diphenyl, uses 98-06-6, tert-Butyl benzene 110-61-2, Butanedinitrile 827-52-1, Cyclohexyl benzene 872-36-6, Vinylene carbonate 1072-53-3 1120-71-4, Propanesultone 1469-72-3 1469-73-4, Propylene sulfite 2049-95-8, tert-Pentyl benzene 3741-38-6, Ethylene sulfite 4427-96-7, Vinyl ethylene carbonate 5945-33-5, Bisphenol A

bis(diphenylphosphate) 30008-06-1 114435-02-8, Fluoroethylene carbonate

RL: MOA (Modifier or additive use); USES (Uses)
(flame-retardant type ~~electrolyte~~ solution and its application)

IT 96-47-9, 2-Methyl tetrahydrofuran 96-48-0, γ -Butyrolactone
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 109-87-5, Dimethoxymethane
109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane
111-96-6, Diethylene glycol dimethyl ether 616-38-6, Dimethyl carbonate
623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate
646-06-0, 1,3-Dioxacyclopentane 4437-85-8, Butylene carbonate
403699-22-9 662149-93-1

RL: NUU (Other use, unclassified); USES (Uses)
(flame-retardant type ~~electrolyte~~ solution and its application)

IT 7791-03-9, ~~Lithium~~ perchlorate 14283-07-9, ~~Lithium~~ tetrafluoroborate
21324-40-3, ~~Lithium~~ hexafluorophosphate 29935-35-1, ~~Lithium~~ hexafluoroarsenate
33454-82-9, ~~Lithium~~ trifluoromethanesulfonate 90076-65-6, ~~Lithium~~ bis(trifluoromethane sulfonyl)imide
244761-29-3, ~~Lithium~~ bisoxalatoborate 409071-16-5, ~~Lithium~~ difluoro(oxalato)borate
1242275-53-1 1243632-22-5

RL: TEM (Technical or engineered material use); USES (Uses)
(flame-retardant type ~~electrolyte~~ solution and its application)

L80 ANSWER 7 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2010:1004128 HCAPLUS Full-text

DOCUMENT NUMBER: 153:387664

TITLE: ~~Electrolyte~~ solution capable of improving high/low temperature performance of ~~lithium~~ battery

INVENTOR(S): Li, Lifei; Xu, Lina; Yuan, Jie; Yuan, Xiangyun; Fang, Jianhui; Luo, Hongjun; Wang, Yiming; Guo, Jun

PATENT ASSIGNEE(S): Zhangjiagang Guotai-Huarong New Chemical Materials Co., Ltd., Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 15pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

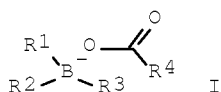
LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CN 101800335	A	20100811	CN 2010-10148030	20100407
PRIORITY APPLN. INFO.:			CN 2010-10148030	20100407

OTHER SOURCE(S): MARPAT 153:387664
GI



AB This electrolyte solution is composed of Li salt (such as Li tetrafluoroborate, LiPF₆, Li hexafluoroarsenate, etc.) 0.001-2 M, organic solvent (carbonate and/or ether), high/low temperature additive 0.01-30%, and other functional additives (such as biphenyl, vinylene carbonate, cyclohexylbenzene, etc.) 0-0.5 M. The high/low temperature additive is ionic compound; its pos. ion is one or more selected from Li ion, quaternary ammonium ion, imidazolium ion, pyridinium ion, etc.; and its neg. ion has structural formula I (R₁-R₄ = halogen, oxo, alkyl, alkoxy, haloalkyl, alkenyl, haloalkenyl, Ph, biphenyl, halophenyl or halobiphenyl). The organic solvent is one or more of THF, 2-methylTHF, ethylene carbonate, propylene carbonate, di-Me carbonate, di-Et carbonate, etc.

IT 92-52-4, Biphenyl, uses 98-06-6, tert-Butylbenzene 827-52-1, Cyclohexylbenzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solution capable of improving high/low temperature performance of lithium battery)

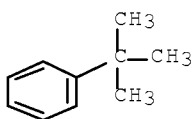
RN 92-52-4 HCAPLUS

CN 1,1'-Biphenyl (CA INDEX NAME)



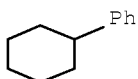
RN 98-06-6 HCAPLUS

CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



RN 827-52-1 HCAPLUS

CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-058 [I,A]

IPCR H01M0010-00 [I,C]; H01M0010-058 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery electrolyte soln high low temp performance

- IT Battery electrolytes
(electrolyte solution capable of improving
high/low temperature performance of lithium battery)
- IT Chemical compounds
RL: TEM (Technical or engineered material use); USES (Uses)
(ionic; electrolyte solution capable of
improving high/low temperature performance of lithium
battery)
- IT Primary batteries
Secondary batteries
(lithium; electrolyte solution capable
of improving high/low temperature performance of lithium
battery)
- IT 92-52-4, Biphenyl, uses 96-49-1D, Ethylene carbonate,
Fluorinated 98-06-6, tert-Butylbenzene 110-61-2,
Butanedinitrile 827-52-1, Cyclohexylbenzene 872-36-6,
Vinylene carbonate 1072-53-3 1120-71-4, 1,3-Propanesultone
1469-72-3 1469-73-4, Propylene sulfite 1633-83-6,
1,4-Butanesultone 2049-95-8, tert-Pentylbenzene 3741-38-6,
Ethylene sulfite 7570-06-1, Ethyl vinyl carbonate 69873-07-0
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte solution capable of improving
high/low temperature performance of lithium battery)
- IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ -Butyrolactone
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 109-87-5, Dimethoxymethane
109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane
111-96-6 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl
carbonate 623-96-1, Dipropyl carbonate 646-06-0, 1,3-Dioxolane
4437-85-8, Butylene carbonate
RL: NUU (Other use, unclassified); USES (Uses)
(electrolyte solution capable of improving
high/low temperature performance of lithium battery)
- IT 7791-03-9, Lithium perchlorate 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, Lithium
hexafluorophosphate 29935-35-1, Lithium
hexafluoroarsenate 33454-82-9, Lithium
trifluoromethylsulfonate 90076-65-6, Lithium
bis(trifluoromethanesulfonyl)imide 244761-29-3, Lithium
bis(oxalato)borate 297162-94-8 403699-22-9 409071-16-5,
Lithium difluorooxalatoborate 662149-93-1 768353-04-4D,
salt with lithium or quaternary ammonium ions
1059706-62-5D, salt with lithium or quaternary ammonium
ions 1059706-71-6D, salt with lithium or quaternary
ammonium ions 1242275-53-1 1242275-54-2 1242275-55-3D, salt
with lithium or quaternary ammonium ions 1242275-56-4D,
salt with lithium or quaternary ammonium ions
1242275-57-5D, salt with lithium or quaternary ammonium
ions 1242275-58-6D, salt with lithium or quaternary
ammonium ions 1242275-59-7D, salt with lithium or
quaternary ammonium ions 1242275-60-0D, salt with lithium
or quaternary ammonium ions 1242275-61-1D, salt with
lithium or quaternary ammonium ions 1242275-62-2D, salt
with lithium or quaternary ammonium ions 1242275-63-3D,
salt with fluorinated oxoborate 1242275-64-4D, salt with
fluorinated oxoborate 1242275-65-5D, salt with fluorinated
oxoborate 1242275-66-6D, salt with fluorinated oxoborate
1242275-67-7D, salt with fluorinated oxoborate 1242275-68-8D, salt
with fluorinated oxoborate
RL: TEM (Technical or engineered material use); USES (Uses)

(electrolyte solution capable of improving
high/low temperature performance of lithium battery)

L80 ANSWER 8 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2009:660271 HCAPLUS Full-text

DOCUMENT NUMBER: 151:60209

TITLE: Electrolyte solution for
high-rate discharge lithium ion
battery, and lithium ion battery using
the same

INVENTOR(S): Hou, Tao; Tang, Minmin; Chen, Baiyuan

PATENT ASSIGNEE(S): Dongguan Shanshan Battery Materials Co., Ltd.,
Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu,
6pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CN 101442143	A	20090527	CN 2008-10220078	200812 17
				200812 17

PRIORITY APPLN. INFO.: CN 2008-10220078

AB The invention provides an electrolyte solution for a high-rate discharge Li ion battery, and a Li ion battery using the same. The electrolyte soln. is composed of (by weight%) Li salt 13-15, organic solvent 75-82, and additive 3-7. The Li salt is ≥ 1 of LiPF₆, Li tetrafluoroborate, Li bis(oxalate) borate, etc. The organic solvent is ≥ 1 of ethylene carbonate, propylene carbonate, Et Me carbonate, diPr carbonate, γ -butyrolactone, THF, MeCN, EtOAc, Et formate, Pr formate, and sulfones. The additive is ≥ 1 of vinylene carbonate, biphenyl, cyclohexyl benzene, difluoromethyl formamide, and di-Me acetamide. The inventive electrolyte solution is applicable to a high-rate discharge Li ion battery; it is obviated from increased battery surface temperature when high-rate discharge is performed, and can meet 3C10V overcharge requirement.

IT 92-52-4, Biphenyl, uses 827-52-1,

Cyclohexylbenzene

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

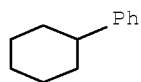
(additives; electrolyte solution for
high-rate discharge lithium ion battery, and
lithium ion battery using the same)

RN 92-52-4 HCAPLUS

CN 1,1'-Biphenyl (CA INDEX NAME)



RN 827-52-1 HCAPLUS
 CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-40 [I,A]; H01M0010-36 [I,C*]
 IPCR H01M0010-36 [I,C]; H01M0010-40 [I,A]
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary lithium battery electrolyte sulfone solvent
 IT Battery electrolytes
 Secondary batteries
 (electrolyte solution for high-rate discharge lithium ion battery, and lithium ion battery using the same)
 IT Sulfones
 RL: TEM (Technical or engineered material use); USES (Uses)
 (organic solvents; electrolyte solution for high-rate discharge lithium ion battery, and lithium ion battery using the same)
 IT 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6, Lithium bis(trifluoromethane sulfone imide) 244761-29-3, Lithium bis(oxalato)borate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (Li salts; electrolyte soln . for high-rate discharge lithium ion battery, and lithium ion battery using the same)
 IT 75-12-7D, Formamide, difluoromethyl 92-52-4, Biphenyl, uses 127-19-5, Dimethylacetamide 827-52-1, Cyclohexylbenzene 872-36-6, Vinylene carbonate
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (additives; electrolyte solution for high-rate discharge lithium ion battery, and lithium ion battery using the same)
 IT 75-05-8, Acetonitrile, uses 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-94-4, Ethyl formate 109-99-9, THF, uses 110-74-7, Propyl formate 141-78-6, Ethyl acetate, uses 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate 56525-42-9, Methyl propyl carbonate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (organic solvents; electrolyte solution for high-rate discharge lithium ion battery, and lithium ion battery using the same)
 L80 ANSWER 9 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN
 ACCESSION NUMBER: 2009:21692 HCAPLUS Full-text
 DOCUMENT NUMBER: 150:98463
 TITLE: Process for production of lithium oxalatoborate and difluoroborate chelate salts with low content of water and acidic impurities by treatment with lithium hydride
 INVENTOR(S): Dietz, Rainer; Wietelmann, Ulrich; Lischka, Uwe;

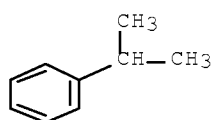
Emmel, Ute
 PATENT ASSIGNEE(S): Chemetall G.m.b.H., Germany
 SOURCE: PCT Int. Appl., 33pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2009004059	A1	20090108	WO 2008-EP58599	20080703
W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
DE 102008040153	A1	20090108	DE 2008-102008040153	20080703
EP 2185569	A1	20100519	EP 2008-774711	20080703
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, AL, BA, MK, RS				
JP 2010531800	T	20100930	JP 2010-513988	20080703
US 20100143806	A1	20100610	US 2010-667550	20100104
IN 2010CN00521	A	20100723	IN 2010-CN521	20100127
CN 101796057	A	20100804	CN 2008-80105689	20100304
PRIORITY APPLN. INFO.:			DE 2007-102007031199A	20070704
			WO 2008-EP58599	W 20080703

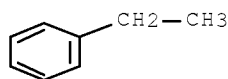
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
 OTHER SOURCE(S): MARPAT 150:98463
 AB Lithium borate chelate salts Li

[(C2O2)B[OCY1Y2(CR1R2)n(CY3Y4)o(CO)mO]] (1) and Li
 [F2B[OCY1Y2(CR1R2)n(CY3Y4)o(CO)mO]] [2; for 1, 2: Y1+Y2 = O, Y1-Y4 = alkoxy,
 H, halo, alkyl; R1, R2 = H, halo, alkoxy, alkyl; m, n, o = 0, 1; preferably
 OCY1Y2(CR1R2)n(CY3Y4)o(CO)mO = L = oxalato, malonato, glycolato, salicylato,
 lactato, catecholato], useful as ~~electrolytes~~ for lithium-ion rechargeable
 batteries, free of water and acidic impurities, were prepared by a process,
 comprising treatment of the raw compds. 1 and 2, containing 0.2% of water and
 ≥ 100 $\mu\text{mol/g}$ of acidic impurities, with 0.01-1% of LiH of ≤ 100 μm particle size
 in an inert, optionally fluorinated organic solvent with b.p. of 110-280°
 under reflux and stirring or in a solvent-free conditions, for 0.5-24 h,
 followed by filtration or distillative removal of the solvent and recrystn. of
 the pure products 1, 2 from polar solvents, preferably from alkylene
 carbonates. Purified compds. 1 and 2 show decomposition temps. by 50-60°
 higher, than raw materials. In an example, 1.18 kg of raw lithium
 bis(oxalato)borate Li[(C2O4)2B] (1a), containing 800 ppm of water content was
 dried and de-acidified by refluxing with 1.9 g of LiH powder in 2.9 Halpasol
 166-170 hydrocarbon mixture at 166-167° for 2.5 h with subsequent distillation
 of the solvent, at final pressure of 15 mbar. The part of the resulting solid
 (263 g), containing 1a, was purified by dissoln. in 1380 g of dry propylene
 carbonate (water content 30 ppm) for 3 h at 120° and filtration through 100 nm
 membrane filter, distillative removal of 971 g of propylene carbonate at 150-
 155° and 10 mbar, cooling to 100°, crystallization and filtration, giving the
 product 1a with 5.7 $\mu\text{mol H}^+/\text{g}$ acidity and 81 ppm of water.

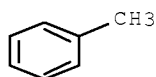
IT 98-82-8, Cumene 100-41-4, Ethylbenzene,
 miscellaneous 108-88-3, Toluene, miscellaneous
 RL: MSC (Miscellaneous)
 (solvent; process for drying and deacidification of
 lithium chelate oxalatoborate and difluoroborate
~~electrolytes~~ for lithium secondary batteries by
 treatment with lithium hydride and recrystn.)
 RN 98-82-8 HCAPLUS
 CN Benzene, (1-methylethyl)- (CA INDEX NAME)



RN 100-41-4 HCAPLUS
 CN Benzene, ethyl- (CA INDEX NAME)



RN 108-88-3 HCAPLUS
 CN Benzene, methyl- (CA INDEX NAME)



IPCI C07F0005-02 [I,A]; C07F0005-00 [I,C*]; H01M0010-40 [I,A];
H01M0010-36 [I,C*]

IPCR C07F0005-00 [I,C]; C07F0005-02 [I,A]; H01M0010-00 [I,C*];
H01M0010-052 [I,A]; H01M0010-0567 [I,A]; H01M0010-0568 [I,A];
H01M0010-0569 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]

CC 29-4 (Organometallic and Organometalloidal Compounds)
Section cross-reference(s): 52, 76

ST lithium oxalato borate difluoroborate complex salt purifn
drying process; electrolyte lithium oxalato
difluoro borate battery purifn drying process; drying agent
lithium hydride oxalato borate difluoroborate
electrolyte complex

IT Borates
RL: PUR (Purification or recovery); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(chelate, lithium; process for drying and
deacidification of lithium chelate oxalatoborate and
difluoroborate electrolytes for lithium
secondary batteries by treatment with lithium hydride
and recrystn.)

IT Carbonates, miscellaneous
RL: MSC (Miscellaneous)
(esters, alkylene; process for drying and deacidification of
lithium chelate oxalatoborate and difluoroborate
electrolytes for lithium secondary batteries by
treatment with lithium hydride and recrystn.)

IT Secondary batteries
(lithium, electrolytes; process for drying
and deacidification of lithium chelate oxalatoborate
and difluoroborate electrolytes for lithium
secondary batteries by treatment with lithium hydride
and recrystn.)

IT Acidity
Battery electrolytes
Drying
Drying agents
Electrolytes
Filtration
Recrystallization
Thermal decomposition
(process for drying and deacidification of lithium
chelate oxalatoborate and difluoroborate electrolytes
for lithium secondary batteries by treatment with
lithium hydride and recrystn.)

IT Chelates
RL: PUR (Purification or recovery); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(process for drying and deacidification of lithium
chelate oxalatoborate and difluoroborate electrolytes
for lithium secondary batteries by treatment with
lithium hydride and recrystn.)

IT Ethers, miscellaneous
Ketones, miscellaneous
Nitriles, miscellaneous
RL: MSC (Miscellaneous)
(solvents; process for drying and deacidification of
lithium chelate oxalatoborate and difluoroborate
electrolytes for lithium secondary batteries by

treatment with lithium hydride and recrystn.)

IT 244761-29-3P, Lithium bis(oxalato)borate 383187-24-4P
 409071-16-5P 446234-10-2P 446234-12-4P 454475-28-6P
 866596-75-0P 906672-54-6P 1094595-68-2P 1094595-69-3P
 1094595-70-6P 1094595-71-7P
 RL: PUR (Purification or recovery); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (process for drying and deacidification of lithium chelate oxalatoborate and difluoroborate electrolytes for lithium secondary batteries by treatment with lithium hydride and recrystn.)

IT 7580-67-8, Lithium hydride
 RL: RGT (Reagent); RACT (Reactant or reagent)
 (process for drying and deacidification of lithium chelate oxalatoborate and difluoroborate electrolytes for lithium secondary batteries by treatment with lithium hydride and recrystn.)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
 98-82-8, Cumene 100-41-4, Ethylbenzene,
 miscellaneous 101-84-8, Diphenyl ether 108-29-2,
 γ -Valerolactone 108-32-7, Propylene carbonate
 108-88-3, Toluene, miscellaneous 111-65-9, Octane,
 miscellaneous 111-84-2, Nonane 112-40-3, Dodecane 124-18-5,
 Decane 142-82-5, Heptane, miscellaneous 142-96-1, Dibutyl ether
 306-94-5, Perfluorodecalin 307-34-6, Perfluorooctane 307-45-9,
 Perfluorodecane 375-96-2, Perfluorononane 693-65-2, Dipentyl
 ether 1120-21-4, Undecane 1330-20-7, Xylene, miscellaneous
 4437-85-8, Butylene carbonate 51294-16-7, Perfluoromethyldecalin
 RL: MSC (Miscellaneous)
 (solvent; process for drying and deacidification of lithium chelate oxalatoborate and difluoroborate electrolytes for lithium secondary batteries by treatment with lithium hydride and recrystn.)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L80 ANSWER 10 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN
 ACCESSION NUMBER: 2008:1464195 HCAPLUS Full-text
 DOCUMENT NUMBER: 150:59835
 TITLE: Chemical formation method of secondary lithium battery
 INVENTOR(S): Wei, Yanwei; Zhang, Jing; Wang, Xiaopu
 PATENT ASSIGNEE(S): Shanghai BYD Co., Ltd., Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu,
 18pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CN 101315994	A	20081203	CN 2007-10106086	200705 31
CN 101315994	B	20100602		
PRIORITY APPLN. INFO.:			CN 2007-10106086	

200705

31

AB The title method comprises: injecting 40-85% 1st electrolyte solution, which contains 0.1-1.0 mol/L lithium salt and a mixture of a linear acid ester and a film forming additive into a secondary lithium battery; aging; performing primary charging; injecting 15-60% 2nd electrolyte solution, which contains the lithium salt, the mixture of a linear acid ester, and an overcharge additive into a secondary lithium battery; and performing secondary charging. The invention effectively improves comprehensive electrochem. performances of the battery.

IT 92-52-4, Biphenyl, uses 827-52-1, Phenyl cyclohexane
 RL: MOA (Modifier or additive use); USES (Uses)
 (formation method of secondary lithium batteries)

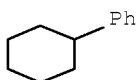
RN 92-52-4 HCAPLUS

CN 1,1'-Biphenyl (CA INDEX NAME)



RN 827-52-1 HCAPLUS

CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-38 [I,A]

IPCR H01M0010-36 [I,C]; H01M0010-38 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST formation lithium secondary battery cycle overcharge charge performance

IT Aging, materials
 Battery electrolytes
 (formation method of secondary lithium batteries)

IT Secondary batteries
 (lithium; formation method of secondary lithium batteries)

IT 92-52-4, Biphenyl, uses 827-52-1, Phenyl cyclohexane
 RL: MOA (Modifier or additive use); USES (Uses)
 (formation method of secondary lithium batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate
 1469-73-4, Propylene sulfite 3741-38-6, Ethylene sulfite
 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide (CoLiO2) 21324-40-3, Lithium hexafluorophosphate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (formation method of secondary lithium batteries)

L80 ANSWER 11 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2007:1277956 HCAPLUS Full-text
 DOCUMENT NUMBER: 147:525343
 TITLE: Nonaqueous electrolyte
 solution and secondary nonaqueous
 electrolyte battery
 INVENTOR(S): Fujii, Takashi; Shima, Noriko; Ohashi, Youichi;
 Kinoshita, Shinichi
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corporation, Japan
 SOURCE: PCT Int. Appl., 241 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2007126068	A1	20071108	WO 2007-JP59207	200704 27
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
JP 2007299541	A	20071115	JP 2006-124042	200604 27
JP 2007299542	A	20071115	JP 2006-124044	200604 27
JP 2007299543	A	20071115	JP 2006-124045	200604 27
JP 2007317654	A	20071206	JP 2007-118487	200704 27
JP 2007317655	A	20071206	JP 2007-118488	200704 27
KR 2008111139	A	20081222	KR 2008-7028011	200704 27
EP 2012386	A1	20090107	EP 2007-742642	200704 27
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, MK, RS				
KR 2010133455	A	20101221	KR 2010-7024127	200704 27

KR 1017875	B1	20110304		
CN 101432923	A	20090513	CN 2007-80015008	
				200810 27
US 20090325065	A1	20091231	US 2009-298440	
				200902 11
PRIORITY APPLN. INFO.:			JP 2006-124041	A 200604 27
			JP 2006-124042	A 200604 27
			JP 2006-124043	A 200604 27
			JP 2006-124044	A 200604 27
			JP 2006-124045	A 200604 27
			KR 2008-7028011	A3 200704 27
			WO 2007-JP59207	W 200704 27

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

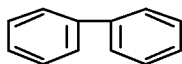
AB The battery has a Li-intercalating anode containing an anode active mass which comprises ≥ 1 atom selected from Si, Sn and Pb, and an electrolyte solution; where the electrolyte solution contains a carbonate containing an unsatd. bond and/or a halogen atom, and at least one compound selected from compds. (A), (B), (C), (D) and (E) specified in the description.

IT 92-52-4, Biphenyl, uses 98-06-6, (1,1-Dimethyl ethyl) benzene 827-52-1, Cyclohexyl benzene

RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte solns. containing carbonates and additives for secondary lithium batteries)

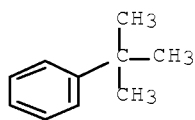
RN 92-52-4 HCAPLUS

CN 1,1'-Biphenyl (CA INDEX NAME)

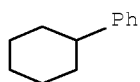


RN 98-06-6 HCAPLUS

CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



RN 827-52-1 HCAPLUS
 CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-36 [I,A]; H01M0004-04 [I,A]; H01M0004-40 [I,A]
 IPCR H01M0004-02 [I,C*]; H01M0004-04 [I,C*]; H01M0004-04 [I,A];
 H01M0004-134 [I,A]; H01M0004-40 [I,C]; H01M0004-40 [I,A];
 H01M0004-58 [I,C*]; H01M0004-58 [I,A]; H01M0010-00 [I,C*];
 H01M0010-0568 [I,A]
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary battery anode silicon tin lead; battery
 electrolyte carbonate lithium salt
 anhydride
 IT Battery anodes
 Battery electrolytes
 (electrolyte solns. containing carbonates and
 additives for secondary lithium batteries)
 IT Secondary batteries
 (lithium; electrolyte solns. containing
 carbonates and additives for secondary lithium
 batteries)
 IT 55-98-1, Busulfan 66-27-3, Methyl methane sulfonate 67-68-5,
 Dimethyl sulfoxide, uses 67-71-0, Dimethyl sulfone 75-18-3,
 Dimethyl sulfide 85-44-9, Phthalic anhydride 92-06-8,
 1,3-Diphenyl benzene 92-52-4, Biphenyl, uses
 98-06-6, (1,1-Dimethyl ethyl) benzene 108-30-5, Succinic
 anhydride, uses 108-31-6, Maleic anhydride, uses 127-63-9,
 Diphenyl sulfone 139-66-2, Diphenyl sulfide 462-06-6,
 Fluorobenzene 544-40-1, Dibutyl sulfide 629-45-8, Dibutyl
 disulfide 699-30-9 756-79-6, Dimethyl methyl phosphonate
 791-28-6, Triphenyl phosphine oxide 814-29-9, Tributyl phosphine
 oxide 827-52-1, Cyclohexyl benzene 882-33-7, Diphenyl
 disulfide 945-51-7, Diphenyl sulfoxide 1667-08-9 1717-82-4,
 1-Cyclohexyl 2-fluorobenzene 1717-84-6, 1-Cyclohexyl
 4-fluorobenzene 1973-15-5 2170-03-8, Itaconic anhydride
 2240-41-7, Dimethyl phenyl phosphonate 3561-67-9, Bis(phenyl thio)
 methane 4480-83-5, Diglycolic anhydride 4775-09-1, Ethyl diethyl
 phosphinate 16156-59-5, Phenyl methane sulfonate 25236-64-0,
 2,2,2-Trifluoroethyl methane sulfonate 33454-82-9, Lithium
 trifluoromethane sulfonate 90076-65-6 117186-54-6 132404-42-3
 132843-44-8 390750-44-4 409071-16-5 412030-34-3 521065-36-1
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing carbonates and
 additives for secondary lithium batteries)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 872-36-6, Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate

12190-79-3, Cobalt lithium oxide (CoLiO₂) 21324-40-3,
 lithium hexafluorophosphate 114435-02-8, Fluoroethylene
 carbonate 918298-87-0, Carbon 12, copper 8.1, silicon 73
 RL: TEM (Technical or engineered material use); USES (Uses)
 (electrolyte solns. containing carbonates and
 additives for secondary lithium batteries)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L80 ANSWER 12 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2007:550263 HCAPLUS Full-text

DOCUMENT NUMBER: 147:34382

TITLE: Nonaqueous electrolyte
 solution containing mixed
 additive for secondary lithium
 battery

INVENTOR(S): Xiao, Feng; Wang, Mingxia; Zhou, Guishu; You,
 Huaying

PATENT ASSIGNEE(S): BYD Company Limited, Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing, 17 pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
CN 1964124	A	20070516	CN 2005-10101337	200511 10
CN 100449854	C	20090107		
PRIORITY APPLN. INFO.:			CN 2005-10101337	200511 10

AB The title electrolyte solution contains an electrolyte salt, an organic solvent, and an additive composed of 0.2-8.2% biphenyl, 1.0-9.0% cyclohexyl benzene, and 0.1-5.1 lithium salt selected from lithium carbonate, lithium sulfite, and lithium sulfate. The inventive electrolyte can improve comprehensive performance of secondary lithium battery, such as overcharge performance, high-temperature performance, and low-temperature discharge performance, etc.

IT 92-52-4, Biphenyl, uses 827-52-1, Cyclohexyl benzene

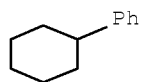
RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing mixed
 additives for secondary lithium batteries)

RN 92-52-4 HCAPLUS

CN 1,1'-Biphenyl (CA INDEX NAME)



RN 827-52-1 HCAPLUS
 CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-40 [I,A]; H01M0010-36 [I,A]; H01M0006-16 [I,A]; H01M0010-36 [I,C]; H01M0010-40 [I,A]; H01M0006-16 [I,C]; H01M0006-16 [I,A]; H01M0010-36 [I,A]
 IPCR H01M0010-36 [I,C]; H01M0010-40 [I,A]; H01M0006-16 [I,C]; H01M0006-16 [I,A]; H01M0010-36 [I,A]
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary battery electrolyte additive biphenyl cyclohexyl benzene lithium salt
 IT Battery electrolytes
 (electrolyte solns. containing mixed additives for secondary lithium batteries)
 IT Secondary batteries
 (lithium; electrolyte solns. containing mixed additives for secondary lithium batteries)
 IT 92-52-4, Biphenyl, uses 554-13-2, Lithium carbonate 827-52-1, Cyclohexyl benzene 10377-48-7, Lithium sulfate
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing mixed additives for secondary lithium batteries)

L80 ANSWER 13 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2007:463514 HCAPLUS Full-text

DOCUMENT NUMBER: 146:465266

TITLE: Additive mixture of electrolyte solution for secondary lithium battery and electrolyte solution using the additive mixture

INVENTOR(S): Xiao, Feng; Wang, Mingxia; Zhou, Guishu; You, Huaying

PATENT ASSIGNEE(S): Byd Company Ltd., Peop. Rep. China

SOURCE: PCT Int. Appl., 23pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2007045162	A1	20070426	WO 2006-CN2727	

200610

17

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY,

MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM,
 PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV,
 SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM,
 ZW
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,
 IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,
 TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
 ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 CN 1953267 A 20070425 CN 2005-10100488
 200510
 18
 CN 100449852 C 20090107
 CA 2625991 A1 20070426 CA 2006-2625991
 200610
 17
 EP 1939970 A1 20080702 EP 2006-804946
 200610
 17
 EP 1939970 B1 20090819
 R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,
 IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK,
 TR
 JP 2009512168 T 20090319 JP 2008-535872
 200610
 17
 AT 440393 T 20090915 AT 2006-804946
 200610
 17
 US 20070105021 A1 20070510 US 2006-583486
 200610
 18
 US 7700242 B2 20100420
 KR 2008059309 A 20080626 KR 2008-7011940
 200805
 19
 KR 1000581 B1 20101210
 US 20090042103 A1 20090212 US 2008-90728
 200807
 29
 US 7790322 B2 20100907
 PRIORITY APPLN. INFO.: CN 2005-10100488 A
 200510
 18
 WO 2006-CN2727 W
 200610
 17

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The ~~additive~~ mixture contains 0.5-95.4 weight% biphenyl based compound, 0.1-93.8 weight% cyclohexyl benzene based compound, 0.4-93.2 w.t% vinylene carbonate, 0.5-96.5 weight% t-alkyl benzene based compound, and 0.5-95.8 weight% ethenyl sulfonyl benzene, based on total weight of the ~~additive~~ mixture The ~~electrolyte~~ solution contains a Li salt of 65-85 weight%, an organic solvent of 5-15 weight%, and the above ~~additive~~ mixture 1-30 weight%.

IT 92-52-4, Biphenyl, uses 98-06-6
 827-52-1, Cyclohexyl benzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (compns. of additives in electrolyte)

solns. for secondary lithium batteries)

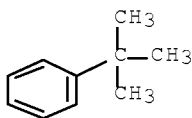
RN 92-52-4 HCAPLUS

CN 1,1'-Biphenyl (CA INDEX NAME)



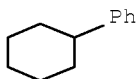
RN 98-06-6 HCAPLUS

CN Benzene, (1,1-dimethylethyl)- (CA INDEX NAME)



RN 827-52-1 HCAPLUS

CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-40 [I,A]

IPCR H01M0010-36 [I,C]; H01M0010-40 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery electrolyte
additive biphenyl based compd; electrolyte
additive ethenyl sulfonyl benzene cyclohexyl benzene based
compd; battery electrolyte additive vinylene
additive

IT Battery electrolytes
(compns. of additives in electrolyte
solns. for secondary lithium batteries)

IT 92-52-4, Biphenyl, uses 96-49-1, Ethylene carbonate
98-06-6 616-38-6, Dimethyl carbonate 623-53-0, Ethyl
methyl carbonate 827-52-1, Cyclohexyl benzene
872-36-6, Vinylene carbonate 1007-26-7 4016-06-2,
1,3-Dicyclohexyl benzene 5535-48-8, Ethenyl sulfonyl benzene
21324-40-3, Lithium hexafluorophosphate 26140-60-3,
Terphenyl 28804-58-2

RL: MOA (Modifier or additive use); USES (Uses)
(compns. of additives in electrolyte
solns. for secondary lithium batteries)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L80 ANSWER 14 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2005:547832 HCAPLUS Full-text

DOCUMENT NUMBER: 143:81118
 TITLE: Nonaqueous electrolyte lithium secondary battery
 INVENTOR(S): Nakashima, Satoshi; Usami, Yasushi; Sakai, Akihiko; Hayashi, Manabu
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corporation, Japan; Mitsubishi Plastics, Inc.; Kato, Ryoichi
 SOURCE: PCT Int. Appl., 93 pp., Chemical Indexing Equivalent to 153:603674 (JP), 154:239646 (JP)
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005057690	A1	20050623	WO 2004-JP18985	20041214
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 4586359	B2	20101124	JP 2003-416761	20031215
JP 2005174867	A	20050630		
JP 4635432	B2	20110223	JP 2003-416762	20031215
JP 2005174868	A	20050630		
JP 2005228511	A	20050825	JP 2004-33618	20040210
JP 4586374	B2	20101124		
JP 2005228512	A	20050825	JP 2004-33619	20040210
EP 1705736	A1	20060927	EP 2004-807342	20041214
R: DE				
CN 1934728	A	20070321	CN 2004-80041089	20041214
CN 100541863	C	20090916		
JP 2005259680	A	20050922	JP 2004-376962	20041227
US 20070048607	A1	20070301	US 2006-453006	

				200606 15
KR 2007019965	A	20070216	KR 2006-7014229	
				200607 14
PRIORITY APPLN. INFO.:			JP 2003-416761	A 200312 15
			JP 2003-416762	A 200312 15
			JP 2004-33617	A 200402 10
			JP 2004-33618	A 200402 10
			JP 2004-33619	A 200402 10
			WO 2004-JP18985	W 200412 14

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

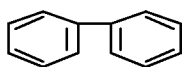
AB The present invention aims to improve cycle characteristics of a high-capacity secondary battery wherein an active material is filled in at a high d. by using a particulate active material having a small aspect ratio. Disclosed is a nonaq. ~~electrolyte~~ secondary battery comprising a pos. electrode and neg. electrode capable of adsorbing/desorbing lithium, a separator and a nonaq. ~~electrolyte solution~~ containing a nonaq. solvent and a lithium salt is characterized in that the separator has a porous film composed of a thermoplastic resin containing an inorg. filler, and in that the active material contained in the neg. electrode is a particulate active material having an aspect ratio of not less than 1.02 and not more than 3 and/or the active material contained in the pos. electrode is a particulate active material having an aspect ratio of not less than 1.02 and not more than 2.2.

IT 92-52-4, Biphenyl, uses 827-52-1,
Cyclohexylbenzene

RL: MOA (Modifier or additive use); USES (Uses)
(additive for nonaq. ~~electrolyte~~
solns. for lithium batteries)

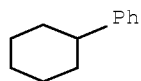
RN 92-52-4 HCAPLUS

CN 1,1'-Biphenyl (CA INDEX NAME)



RN 827-52-1 HCAPLUS

CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0002-16 [ICM,7]; H01M0004-02 [ICS,7]; H01M0004-48 [ICS,7];
 H01M0004-58 [ICS,7]; H01M0010-40 [ICS,7]
 IPCR H01M0002-14 [I,C*]; H01M0002-16 [I,C*]; H01M0002-16 [I,A];
 H01M0002-18 [I,A]; H01M0004-02 [I,C*]; H01M0004-13 [I,A];
 H01M0004-131 [N,A]; H01M0004-133 [N,A]; H01M0004-50 [I,C*];
 H01M0004-50 [N,A]; H01M0004-505 [N,A]; H01M0004-52 [I,C*];
 H01M0004-52 [N,A]; H01M0004-525 [N,A]; H01M0004-58 [I,C*];
 H01M0004-58 [N,A]; H01M0004-587 [N,A]; H01M0006-16 [N,C*];
 H01M0006-16 [N,A]; H01M0010-00 [I,C*]; H01M0010-0525 [I,A];
 H01M0010-0566 [I,A]; H01M0010-0567 [I,A]; H01M0010-0587 [N,A];
 H01M0010-36 [I,C*]; H01M0010-36 [I,A]
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium battery separator cathode active material aspect
 ratio
 IT Polyolefin rubber
 RL: TEM (Technical or engineered material use); USES (Uses)
 (butene-ethylene-propene, block; lithium battery
 separator compns. containing)
 IT Castor oil
 RL: TEM (Technical or engineered material use); USES (Uses)
 (hydrogenated, Hy-Castor Oil; lithium battery separator
 compns. containing)
 IT Battery electrodes
 (lithium battery; aspect ratio of active substances
 for)
 IT Secondary battery separators
 (lithium battery; inorg. fillers for)
 IT Battery electrolytes
 (nonaq.; additives for lithium battery)
 IT 92-52-4, Biphenyl, uses 827-52-1,
 Cyclohexylbenzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (additive for nonaq. electrolyte
 solns. for lithium batteries)
 IT 7782-42-5, Graphite, uses 12190-79-3, Lithium cobalt
 oxide (LiCoO₂) 855472-25-2, Lithium manganese nickel
 oxide (Li_{1.05}Mn_{0.5}Ni_{0.5}O_{2.05})
 RL: TEM (Technical or engineered material use); USES (Uses)
 (aspect ratios of lithium battery electrode active
 substances)
 IT 7727-43-7, Barium sulfate
 RL: MOA (Modifier or additive use); USES (Uses)
 (filler for lithium battery separator compns.)
 IT 9002-88-4, HI-ZEX7000FP
 RL: TEM (Technical or engineered material use); USES (Uses)
 (lithium battery separator compns. containing)
 OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS
 RECORD (3 CITINGS)
 REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

ACCESSION NUMBER: 2004:159908 HCAPLUS Full-text
 DOCUMENT NUMBER: 140:184751
 TITLE: Secondary lithium battery nonaqueous
 electrolytes and secondary
 lithium batteries with prevented
 overcharging
 INVENTOR(S): Shizuka, Kenji; Kinoshita, Shinichi; Noda,
 Daisuke
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

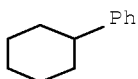
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004063114	A	20040226	JP 2002-216090	200207 25
JP 4348908	B2	20091021	JP 2002-216090	200207 25

PRIORITY APPLN. INFO.:
 OTHER SOURCE(S): MARPAT 140:184751

AB Li salt-containing nonaq. electrolytes also containing overcharging inhibitors and (di)sulfides are claimed. Preferable structure for the the overcharging inhibitor is C6R1R2R3R4R5R6 (R1-6 = H, halogen, (un)substituted hydrocarbon, alkoxy, aryloxy; R1 + R2 may form (un)substituted , phenyleneoxy, ethyleneoxy, trimethyleneoxy, propenyleneoxy, vinyleneoxy). Preferable overcharging inhibitors and (di)sulfides are also given.
 IT 92-52-4, Biphenyl, uses 827-52-1, Cyclohexylbenzene
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (overcharging inhibitor; lithium secondary batteries with nonaq. electrolytes containing overcharging inhibitors and disulfides)
 RN 92-52-4 HCAPLUS
 CN 1,1'-Biphenyl (CA INDEX NAME)



RN 827-52-1 HCAPLUS
 CN Benzene, cyclohexyl- (CA INDEX NAME)



IPCI H01M0010-36 [I,A]
 IPCR H01M0010-36 [I,C*]; H01M0010-40 [I,A]; H01M0010-36 [I,A]
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 25, 27
 ST nonaq electrolyte lithium secondary battery;
 overcharging inhibitor lithium secondary battery
 electrolyte; disulfide additive lithium
 secondary battery electrolyte
 IT Disulfides
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM
 (Technical or engineered material use); USES (Uses)
 (electrolytes containing; lithium secondary
 batteries with nonaq. electrolytes containing overcharging
 inhibitors and disulfides)
 IT Battery electrolytes
 (lithium secondary batteries with nonaq.
 electrolytes containing overcharging inhibitors and
 disulfides)
 IT Secondary batteries
 (lithium; lithium secondary batteries with
 nonaq. electrolytes containing overcharging inhibitors and
 disulfides)
 IT 21324-40-3, Lithium hexafluorophosphate (LiPF₆)
 RL: DEV (Device component use); TEM (Technical or engineered
 material use); USES (Uses)
 (electrolyte salt; lithium
 secondary batteries with nonaq. electrolytes containing
 overcharging inhibitors and disulfides)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); TEM (Technical or engineered
 material use); USES (Uses)
 (electrolyte solvent; lithium
 secondary batteries with nonaq. electrolytes containing
 overcharging inhibitors and disulfides)
 IT 2127-03-9, 2,2'-Dipyridyl disulfide 2127-10-8,
 2,2'-Dithiobis(5-nitropyridine) 2645-22-9, 4,4'-Dipyridyl
 disulfide 15658-35-2, 6,6'-Dithiodinicotinic acid
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM
 (Technical or engineered material use); USES (Uses)
 (electrolytes containing; lithium secondary
 batteries with nonaq. electrolytes containing overcharging
 inhibitors and disulfides)
 IT 92-52-4, Biphenyl, uses 95-72-7, 2-Chloro-p-xylene
 101-81-5, Diphenylmethane 101-84-8, Diphenyl ether 103-29-7,
 1,2-Diphenylethane 104-66-5, 1,2-Diphenoxyethane 104-92-7,
 4-Bromoanisole 132-64-9, Dibenzofuran 321-60-8, 2-Fluorobiphenyl
 324-74-3, 4-Fluorobiphenyl 362-56-1,
 1,2,4,5-Tetrafluoro-3,6-dimethoxybenzene 392-69-8,
 2-Fluoromesitylene 396-64-5, 3,3'-Difluorobiphenyl 398-23-2,
 4,4'-Difluorobiphenyl 452-10-8, 2,4-Difluoroanisole 456-49-5,
 3-Fluoroanisole 459-60-9, 4-Fluoroanisole 583-70-0,
 4-Bromo-m-xylene 612-75-9, 3,3'-Dimethylbiphenyl 613-33-2,
 4,4'-Dimethylbiphenyl 615-60-1, 4-Chloro-o-xylene 623-12-1,
 4-Chloroanisole 643-58-3, 2-Methylbiphenyl 643-93-6,
 3-Methylbiphenyl 644-08-6, 4-Methylbiphenyl 766-51-8,
 2-Chloroanisole 778-22-3, 2,2-Diphenylpropane 827-52-1
 , Cyclohexylbenzene 1625-92-9, 4-tert-Butylbiphenyl 1667-08-9

1973-15-5, 3-Cyclohexylbiphenyl 2845-89-8, 3-Chloroanisole
 3061-36-7, 1,4-Diphenoxybenzene 3150-40-1,
 2,3,5,6-Tetrafluoro-4-methylanisole 3379-38-2,
 1,3-Diphenoxybenzene 4016-06-2, 1,3-Dicyclohexylbenzene
 6738-04-1, 2-Phenoxybiphenyl 7051-16-3,
 1,3-Dimethoxy-5-chlorobenzene 17715-69-4,
 1,3-Dimethoxy-4-bromobenzene 20273-26-1 25245-34-5 26140-60-3,
 Terphenyl 52189-63-6, 1-Fluoro-3,5-dimethoxybenzene 82830-49-7,
 1,4-Dimethoxy-2-fluorobenzene 93343-10-3, 3,5-Difluoroanisole
 97762-38-4 258268-48-3

RL: DEV (Device component use); MOA (Modifier or additive use); TEM
 (Technical or engineered material use); USES (Uses)
 (overcharging inhibitor; lithium secondary batteries
 with nonaq. electrolytes containing overcharging inhibitors
 and disulfides)

L80 ANSWER 16 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2001:449916 HCAPLUS Full-text

DOCUMENT NUMBER: 135:45792

TITLE: Methods of purifying organic lithium
 salts

INVENTOR(S): Gorkovenko, Alexander; Soloveichik, Grigorii L.

PATENT ASSIGNEE(S): Moltech Corporation, USA

SOURCE: U.S., 16 pp., Cont.-in-part of U.S. Ser. No.
 127,468, abandoned.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6248883	B1	20010619	US 1998-205873	199812 04
WO 2000006538	A1	20000210	WO 1999-US17347	199907 29
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9953293	A	20000221	AU 1999-53293	199907 29
PRIORITY APPLN. INFO.:		US 1998-127468	B2	199807 31
		US 1998-205873	A	199812 04
		WO 1999-US17347	W	

199907

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ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Provided are methods of purification of an organic lithium salt comprising the steps of: (a) dissolving an impure organic lithium salt in a solution comprising an organic complexing solvent; (b) crystallizing from said solution a solid solvate complex comprising said lithium salt and said organic complexing solvent; (c) separating said solid solvate complex from said solution; (d) dissociating said solid solvate complex to yield: (i) said lithium salt in a solid form, and, (ii) a volatile composition comprising said organic complexing solvent; and, (e) removing said volatile composition to yield said lithium salt in a solid form of purity greater than the purity of said impure lithium salt. The present invention also pertains to electrolytes for elec. current producing cells comprising such purified lithium salts. Thus, (CF₃SO₂)₂NLi was purified by crystallization of the 1,4-dioxane complex and heating under vacuum at 125° to remove the dioxane.

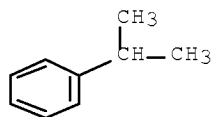
IT 110-00-9, Furan
 RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (purification of organic lithium salts by ether complexation, crystallization and removal)

RN 110-00-9 HCAPLUS
 CN Furan (CA INDEX NAME)

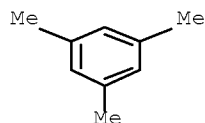


IT 98-82-8, Isopropylbenzene 108-67-8,
 Mesitylene, uses 108-88-3, Toluene, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent for purification of organic lithium salts by ether complexation, crystallization and removal)

RN 98-82-8 HCAPLUS
 CN Benzene, (1-methylethyl)- (CA INDEX NAME)

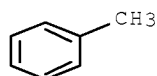


RN 108-67-8 HCAPLUS
 CN Benzene, 1,3,5-trimethyl- (CA INDEX NAME)



RN 108-88-3 HCAPLUS

CN Benzene, methyl- (CA INDEX NAME)



INCL 540544000
 IPCI C07D0281-02 [ICM,7]; C07D0281-00 [ICM,7,C*]; C07D0207-36 [ICS,7];
 C07D0207-00 [ICS,7,C*]
 IPCR C07C0303-00 [I,C*]; C07C0303-44 [I,A]; C07C0311-00 [I,C*];
 C07C0311-48 [I,A]; C07D0207-00 [I,C*]; C07D0207-36 [I,A];
 C07D0285-00 [I,C*]; C07D0285-36 [I,A]; C09D0011-00 [I,C*];
 C09D0011-00 [I,A]; H01M0010-36 [I,C*]; H01M0010-40 [I,A]
 NCL 540/544.000; 540/467.000; 548/547.000; 558/044.000; 558/056.000;
 562/030.000; 562/045.000; 564/080.000; 568/023.000
 CC 21-2 (General Organic Chemistry)
 Section cross-reference(s): 52
 ST org lithium salt purifn ether complexation;
 electrolyte lithium salt purifn
 IT Ethers, reactions
 RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or
 reagent); USES (Uses)
 (complexation of ethers with lithium for purification of
 organic lithium salts)
 IT Phenols, preparation
 Sulfonamides
 RL: PUR (Purification or recovery); PREP (Preparation)
 (lithium salts)
 IT Carboxylic acids, preparation
 Sulfonic acids, preparation
 RL: PUR (Purification or recovery); PREP (Preparation)
 (lithium salts; purification of organic
 lithium salts by ether complexation, crystallization
 and removal)
 IT Battery electrolytes
 (purification of lithium bis(trifluoromethanesulfonyl)imide
 for use as battery electrolyte)
 IT 90076-65-6P, lithium bis(trifluoromethylsulfonyl)imide
 RL: DEV (Device component use); PUR (Purification or recovery); PREP
 (Preparation); USES (Uses)
 (purification by crystallization of ether complex for use as battery
 electrolyte)
 IT 60-29-7, Diethyl ether, reactions 108-20-3, Diisopropyl ether
 109-99-9, Tetrahydrofuran, reactions 110-00-9, Furan
 110-87-2, Dihydropyran 111-43-3, Dipropyl ether 115-10-6,
 Dimethyl ether 123-91-1, 1,4-Dioxane, reactions 142-68-7,
 Tetrahydropyran 142-96-1, Dibutyl ether 505-68-0, 1,4-Dioxepane
 540-67-0, Ethyl methyl ether 557-17-5, Methyl propyl ether
 592-90-5, Oxepane 598-53-8, Methyl isopropyl ether 628-28-4,
 Methyl butyl ether 929-56-6, Methyl octyl ether 1634-04-4,
 Methyl tert-butyl ether 4747-07-3, Methyl hexyl ether 6572-91-4,
 1,4-Dioxocane 6572-98-1, Oxocane 10143-60-9, Di(2-ethylhexyl)
 ether 13423-15-9, 3-Methyltetrahydrofuran
 RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or
 reagent); USES (Uses)
 (purification of organic lithium salts by ether
 complexation, crystallization and removal)

IT 7439-93-2DP, Lithium, salts, preparation
 RL: PUR (Purification or recovery); PREP (Preparation)
 (purification of organic lithium salts by ether
 complexation, crystallization and removal)

IT 344563-88-8P 344563-90-2P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
 RACT (Reactant or reagent)
 (purification of organic lithium salts by ether
 complexation, crystallization and removal)

IT 78-78-4, Isopentane 95-47-6, o-Xylene, uses 96-37-7,
 Methylcyclopentane ~~98-82-8~~, Isopropylbenzene 106-42-3,
 p-Xylene, uses 107-83-5, Isohexane 108-38-3, m-Xylene, uses
~~108-67-8~~, Mesitylene, uses 108-87-2, Methylcyclohexane
~~108-88-3~~, Toluene, uses 108-90-7, Chlorobenzene, uses
 109-66-0, Pentane, uses 110-54-3, Hexane, uses 110-82-7,
 Cyclohexane, uses 111-65-9, Octane, uses 111-84-2, Nonane
 124-18-5, Decane 287-92-3, Cyclopentane 291-64-5, Cycloheptane
 292-64-8, Cyclooctane 540-84-1, Isooctane 25321-09-9,
 Diisopropylbenzene 25321-22-6, Dichlorobenzene 25340-17-4,
 Diethylbenzene 25550-14-5, Methyleneethylbenzene
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent for purification of organic lithium salts by
 ether complexation, crystallization and removal)

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L80 ANSWER 17 OF 17 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 1991:475311 HCAPLUS Full-text

DOCUMENT NUMBER: 115:75311

ORIGINAL REFERENCE NO.: 115:12959a,12962a

TITLE: Conductivity of electrolytes for
 rechargeable lithium batteries

AUTHOR(S): Dudley, J. T.; Wilkinson, D. P.; Thomas, G.;
 LeVae, R.; Woo, S.; Blom, H.; Horvath, C.;
 Juzkow, M. W.; Denis, B.; et al.

CORPORATE SOURCE: Moli Energy (1990) Ltd., Burnaby, BC, V5C 4G2,
 Can.

SOURCE: Journal of Power Sources (1991), 35(1), 59-82
 CODEN: JPSODZ; ISSN: 0378-7753

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The elec. conductivity of 150 ~~electrolyte~~ solns. of nonaq. (esters, ethers,
 aromatic and chlorinated organic compds.) solvents and ~~Li salts~~ [LiPF₆, LiBF₄,
 LiAsF₆, LiCF₃SO₃, and LiN(CF₃SO₂)₂], for rechargeable ~~Li~~ batteries, was
 measured as a function of temperature, between -60 to 80°. The effect of
 viscosity of ~~electrolyte~~ solns. on the conductivity was also determined
 Addition of aromatic and halogenated organic solvents enhanced ~~electrolyte~~
 conductivity

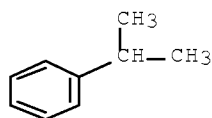
IT ~~98-82-8~~, Cumene 100-41-4, Ethylbenzene,
 properties ~~108-88-3~~, Toluene, properties

RL: PRP (Properties)

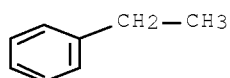
(elec. conductivity of ~~electrolyte~~ containing lithium
~~salt~~ and, for rechargeable lithium batteries)

RN 98-82-8 HCAPLUS

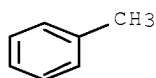
CN Benzene, (1-methylethyl)- (CA INDEX NAME)



RN 100-41-4 HCAPLUS
 CN Benzene, ethyl- (CA INDEX NAME)



RN 108-88-3 HCAPLUS
 CN Benzene, methyl- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 72, 76

ST lithium battery nonaq electrolyte cond; ester
 lithium salt electrolyte cond; ether
 lithium salt electrolyte cond; arom
 compd lithium salt electrolyte cond;
 chloroorg compd lithium salt electrolyte
 cond

IT Batteries, secondary
 (lithium, nonaq. electrolytes for, conductivity of,
 temperature and viscosity effects on)

IT Electric conductivity and conduction
 (of lithium salt-organic compound nonaq.
 electrolytes, temperature and viscosity effects on)

IT 19836-78-3, 3-Methyl-2-oxazolidinone
 RL: USES (Uses)
 (elec. conductivity of electrolyte containing lithium
 salt and, for rechargeable lithium batteries)

IT 68-12-2, N,N-Dimethylformamide, properties 71-43-2, Benzene,
 properties 75-09-2, Methylene chloride, properties 75-69-4,
 Fluorotrichloromethane 78-10-4, Tetraethylorthosilicate 95-47-6,
 properties 95-63-6, Pseudocumene 96-47-9,
 2-Methyl-tetrahydrofuran 96-48-0, γ -Butyrolactone 96-49-1,
 Ethylene carbonate 98-82-8, Cumene 100-41-4,
 Ethylbenzene, properties 108-32-7, Propylene carbonate 108-38-3,
 properties 108-88-3, Toluene, properties 109-87-5,
 Dimethoxymethane 109-99-9, Tetrahydrofuran, properties 110-71-4,
 Dimethoxyethane 111-96-6, Diglyme 112-36-7, Ethyldiglyme
 112-49-2, Triglyme 126-33-0, Sulfolane 143-24-8, Tetraglyme
 598-03-8, Propylsulfone 629-14-1 872-93-5, 3-Methyl-sulfolane
 RL: PRP (Properties)
 (elec. conductivity of electrolyte containing lithium

salt and, for rechargeable lithium batteries)
IT 14283-07-9, Lithium tetrafluoroborate (LiBF₄)
21324-40-3, Lithium hexafluorophosphate (LiPF₆)
29935-35-1, Lithium hexafluoroarsenate (LiAsF₆)
33454-82-9 90076-65-6
RL: USES (Uses)
(elec. conductivity of electrolyte containing organic solvent and,
for rechargeable lithium batteries)
OS.CITING REF COUNT: 80 THERE ARE 80 CAPLUS RECORDS THAT CITE THIS
RECORD (80 CITINGS)

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(FILE 'HOME' ENTERED AT 14:17:27 ON 30 MAR 2011)

FILE 'HCAPLUS' ENTERED AT 14:17:50 ON 30 MAR 2011

E US2006-588481/AP

L1 2 S E3

L2 1 S 2005:823988/AN

SEL RN

FILE 'REGISTRY' ENTERED AT 14:19:47 ON 30 MAR 2011

L3 45 S E1-45

FILE 'REGISTRY' ENTERED AT 14:20:52 ON 30 MAR 2011

E BIPHEYL/CN

E BIPHENYL/CN

L4 1 S E3

E ISOPROPYLBENZENE/CN

L5 1 S E3

E VINYL BENZENE/CN

L6 1 S E3

E ETHYLBENZENE/CN

L7 1 S E3

E TOLUENE/CN

L8 1 S E3

E T-BUTYLBENZENE/CN

L9 1 S E3

E MESITYLENE/CN

L10 1 S E3

E BROMOETHYLBENZENE/CN

L11 1 S E3

E THIOPHENE/CN

L12 1 S E3

E CYCLOHEXYLBENZENE/CN

L13 1 S E3

E FURAN/CN

L14 1 S E3

E FLUOROBIPHENYL/CN

L15 1 S E3

FILE 'HCAPLUS' ENTERED AT 14:42:32 ON 30 MAR 2011

L16 47196 S L4

L17 13306 S L5

L18 81745 S L6

L19 32688 S L7

L20 115160 S L8

L21 3436 S L9

L22 10794 S L10

L23 42 S L11
 L24 14762 S L12
 L25 1834 S L13
 L26 11850 S L14
 L27 12 S L15
 L28 QUE (LI OR LITHIUM) (N) SALT
 L29 QUE ELECTROLY?
 L30 QUE ELECTROLY? (N) (SOLVENT OR SOLUTION)
 L31 799 S L16 AND L17
 L32 11 S L31 AND L29
 L33 2 S L32 AND L28
 L34 8046 S L18 AND L19
 L35 44 S L34 AND L29
 L36 2 S L35 AND L28
 L37 QUE LI OR LITHIUM
 L38 4 S L35 AND L37
 L39 QUE BATTERY
 L40 4 S L35 AND L39
 L41 4 S L36 OR L38 OR L40
 L42 6 S L32 AND L37
 L43 6 S L32 AND L39
 L44 7 S L33 OR L42-43
 L45 1951 S L20 AND L21
 L46 27 S L45 AND L29
 L47 1 S L46 AND L28
 L48 6 S L46 AND L39
 L49 7 S L46 AND L37
 L50 8 S L48 OR L49
 L51 0 S L22 AND L23
 L52 49 S L24 AND L25
 L53 12 S L52 AND L37
 L54 6 S L53 AND L28
 L55 10 S L52 AND L39
 L56 12 S L53 OR L55
 L57 10 S L53 AND L55
 L58 6 S L54 AND L30
 L59 0 S L26 AND L27
 L60 8 S L36 OR L47 OR L58 OR L33
 L61 16 S (L41 OR L44 OR L50 OR L57) NOT L60
 L62 7 S L60 NOT L1

 L63 27139 S (L16 OR L18 OR L20 OR L22 OR L24 OR L26) AND (L25 OR L1
 L64 315 S L63 AND L29
 L65 108 S L64 AND L37
 L66 37 S L65 AND L28
 L67 24 S L66 AND L30
 L68 QUE ADDITIV?
 L69 17 S L67 AND L68
 L70 QUE (FIRST OR 1ST OR 1(W)ST) (2N) L68
 L71 1 S L69 AND L70
 L72 22753 S (L20 OR L22 OR L24 OR L26) AND (L25 OR L17 OR L19 OR L2
 L73 215 S L72 AND L29
 L74 43 S L73 AND L37
 L75 11 S L74 AND L28
 L76 4 S L75 AND L68
 L77 1 S L76 AND L70
 L78 11 S L75-77
 L79 18 S (L69 OR L78) NOT (L61 OR L62)
 L80 17 S L79 NOT L1

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